

REMARKS

Claims 2-7 are currently pending in this application, of which claims 6 and 7 are in independent form.

Claim 6 has been amended, no claims have been additionally canceled, and independent claim 7 has been newly added.

Summary of Examiner Interview

Applicants wish to express appreciation for courtesies extended by Examiner Calvin Ma and Supervisory Patent Examiner Chanh Nguyen to Applicants' representative, James C. Larsen, in an Examiner Interview held October 14, 2009. In the Interview, the claimed invention was discussed, as was the applied Mizutome reference. Applicants' representative expressed Applicants' sincere belief that the Mizutome reference does not disclose every feature of claim 6 as previously recited, particularly in that the Mizutome reference does not appear to base any variation of voltage "so as to prevent changes in gamma characteristics due to differences in response speed of liquid crystal between display gradations, which differences are caused by the insertion of ... monochrome display data." However, Examiners maintained that all features of claim 6, as broadly construed, could be anticipated by Mizutome.

Examiners Ma and Nguyen did, however, provide recommendations of claim amendments which, if claimed, were believed to distinguish the disclosed invention from the prior art. According to the examiner suggestions, claim 6 has been amended to clarify that, in both the impulse drive mode and the hold drive mode, "data is written sequentially in each of scan lines of the liquid crystal display panel and written in each pixel of the liquid crystal display panel."

Claim Rejections Under 35 U.S.C. § 102

The Examiner rejects claims 2, 3, 5 and 6 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,124,842 issued to Mizutome et al. (hereinafter "Mizutome").

As discussed above in the Summary of Examiner Interview, claim 6 has been amended to more clearly recite that "data is written sequentially in each of scan lines of the liquid crystal

display panel and written in each pixel of the liquid crystal display panel” in both the impulse drive mode and the hold drive mode. That is, data is actively written in each pixel during each data rewrite period. In contrast, as discussed in the Examiner Interview, the device disclosed by Mizutome is a bi-stable ferroelectric display in which at least some of the pixels are merely allowed to maintain their stable state, without being actively driven during each rewrite period.

Accordingly, claims 2, 3, 5, and 6 are believed to be in condition for allowance over Mizutome.

Moreover, Applicants maintain that Mizutome does not provide the presently claimed voltage varying device. The Examiner asserts that voltages inherently are varied in a bi-stable ferroelectric display, and that, at least at some level, display gradations directly result. Even if this is true in some aspect, voltage variations are not provided with the purposeful consequence of “prevent[ing] changes in gamma characteristics due to differences in response speed of liquid crystal between display gradations, which differences are caused by insertion of ... monochrome display data.” As explained in detail in the specification, insertion of monochrome (e.g., black) display data within an image data rewrite period affects the response time of the liquid crystal depending on the display gradation displayed. That is, the response time of the liquid crystal for one displayed gradation may be different from that of another. This change degrades image quality in comparison, for example, with an image displayed in hold drive mode. Such degradation is addressed by varying the gradation voltage, as claimed, “to prevent changes in gamma characteristics”.

Mizutome does not consider gamma, much less varying a voltage to prevent changes in gamma characteristics. The voltage variation alleged to be inherent (though not disclosed) in the Mizutome reference is, according to the examiner’s explanation, merely the result of non-ideal voltages applied to smectic liquid crystal in a ferroelectric display (e.g., FELCD). However, Mizutome does not disclose any particular addressing scheme which would require or suggest variation of gradation voltages, much less variation of gradation voltages in order to prevent changes in gamma due to differences in response speed of liquid crystal resulting from insertion of monochrome data. Since the liquid crystal utilized by Mizutome’s device is bi-stable, and

monochrome data is not applied in a rewrite period (in addition to image data), a person having ordinary skill in the art would have had to make some large (and undisclosed) leaps in logic to arrive at the presently-claimed voltage varying device. Hindsight, of course would impermissibly aid such leaps. Nevertheless, Applicants maintain that Mizutome does not disclose the claimed voltage varying device. For this reason, and the amended portions discussed above, claim 6 is believed to be in condition for allowance. Dependent claims 2, 3, and 5 depend from claim 6 and are therefore believed to be in condition for allowance for at least the same reasons. Withdrawal of the rejection and reconsideration are respectfully requested.

Claim Rejections Under 35 U.S.C. § 103

The Examiner rejected claim 4 under 35 U.S.C. § 103(a) as being unpatentable over Mizutome in view of U.S. Patent No. 7,084,861 issued to Iisaka (hereinafter "Iisaka"). This rejection is respectfully traversed.

Claim 4 depends from claim 6 and is believed to be in condition for at least the same reasons discussed above. The Iisaka reference does not remedy the defects of Mizutome. Withdrawal of the rejection and reconsideration of claim 4 are respectfully requested.

New Claim

Claim 7 is newly presented and is believed to be supported by the specification. As noted in the specification, the prior art suffers a limitation in which "the relationship between the display gradation and the display brightness, that is, so-called gamma characteristics differ between the impulse display mode ... and the normal hold display mode". (Page 9, lines 3-7; *see also* Fig. 20.) This results in significantly deteriorated image quality in one drive mode versus the other.

In a disclosed embodiment, "reference gradation voltage data corresponding to the hold display mode is set so that the relationship between the display gradation and the display brightness (liquid crystal transmittance) forms gamma 2.2". (Page 23, line 25 to page 24, line 3.) In contrast, the reference gradation voltage for the impulse display mode "is determined by working out the relationship between the intensity integral I and the voltage T applied to the liquid crystal within on field period, while display brightness (transmittance) changes with time".

(Page 24, lines 17-21.) The “reference gradation voltage data [for the impulse-type display mode], which is different from the one in the hold-type display, is set so that the relationship between the display gradation and the display brightness (liquid crystal transmittance) can form, for example, the relationship of gamma 2.2.” (Page 25, lines 10-14.) Thus, as recited in claim 7:

the voltage varying varies the gradation voltage applied to the liquid crystal display panel so that a relationship between a display gradation of the image and an integral of display transmittance of the image within the input image data rewriting period, in a case where the driving device drives the liquid crystal display panel in the impulse drive mode, is equal to a relationship between the display gradation of the image and the display transmittance of the image in a case where the driving device drives the liquid crystal display panel in the hold drive mode.

This feature of claim 7, *inter alia*, is not disclosed by the prior art of record. Consideration of the claim is respectfully requested.

Conclusion

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact James C. Larsen, Reg. No. 58,565, at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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